Business Case:
Rail Expansion, Emissions Reduction, and Grade Separation Project

Introduction

This document presents a proposed business plan for funding a set of freight rail projects and an emissions reduction strategy that use a public-private partnership framework. A principal objective of this plan is to stimulate discussion among major stakeholders here in southern California, which will help the Southern California Association of Governments (SCAG) refine this plan in the months and years ahead. SCAG developed this business plan for three reasons: (1) to highlight the need for the freight rail projects, (2) to draft a preliminary cost "sharing" proposal to fund these projects, and (3) to solicit comments and feedback from the private and public sectors.

This proposed business plan is organized into two main sections:

1. **A Business Case for Regional Rail Expansion and Reducing Emissions**, which describes the urgent need for freight rail expansion to address surging demand, encourage rail movement of containers (as opposed to trucks), facilitate current and future commuter rail services provided by Metrolink, and reduce emissions to meet 2014 federal air quality standards for PM2.5. The importance of freight rail to the regional and national economies is also summarized in this section.

2. **Rail Expansion and Emission Reduction Strategy,** which describes the rail expansion and emission reduction capital improvements, the estimated capital costs, and financial plan.

1. A Business Case for Rail Expansion and Reducing Emissions

Southern California is the major U.S. gateway for Asian trade and much of this trade moves to/from inland locations via superior rail connections. This rail system has been a vital component in the trade system, providing the region's ports with a competitive edge relative to other West Coast competitors. Moreover, in many cases the same rail right-of-way serves a growing commuter rail service that is critical to the region.

However, rail capacity in the region is already feeling the strains of trade growth and passenger demand:

- Over the next 25 years, container volumes at the San Pedro Bay ports are expected to triple and at least half of these containers will be transported by rail. Table 1 below illustrates the projected growth in overall container traffic (measured in twenty foot container equivalents or TEUs). Total TEU volumes are expected to triple from 14.2 million in 2005 to 42.5 million in 2030, with more than half of it to be transported by rail.

- Over that same period, commuter rail passengers will more than double due to population growth, especially in the Inland Empire. However, passenger rail operates over much of the same track as freight railroads – on track owned by the freight railroads. Additional passenger service may require additional capacity on the regional rail system, and the freight railroads may not give priority to these requirements. Maintaining passenger rail frequency and capacity is critical in order to retain and build ridership for regional passenger rail.

Table 1
San Pedro Ports Cargo Growth Forecasts[1]
(TEUs in Millions)

	Actual 2005	2010	2015	2020	2030
SPB Cargo Forecast	14.2	20.3	27.1	36.2	42.5
Less: Regional Truck	6.8	9.7	13.0	17.4	20.4
Less: Long Haul Truck	0.1	0.2	0.3	0.4	0.4
Total Rail Demand	7.2	10.3	13.8	18.5	21.7

1 – Total San Pedro Bay projections are based on Mercer Management forecasts as adjusted by Port of Los Angeles and Port of Long Beach.

As a consequence of these demand increases, freight train and passenger train volumes will more than double on most lines over the next 20 years, and the rail system will require additional track capacity.

At the same time, the region must also address the significant impact of rail on air quality. The rail system is expected to generate over 25 tons per day of nitrogen oxide and .88 tons per day of particulate matter by 2020. The amount of rail-related emissions is a major contributor to the poor air quality in the region. However, actions can be taken to address the impact of the rail system on regional air quality, while accommodating projected growth in freight and passenger train volumes.

Along with the growth in rail will come needs for grade separations to reduce vehicle delay at rail grade crossings, improve safety, and reduce idling emissions, and mitigate the negative traffic impacts on local communities and cities.

While there are a number of compelling needs for making the rail investments to accommodate continued growth and address the impact of rail on air quality, there are a number of obstacles that could delay or prevent these investments.

- The Class I rail carriers that operate the freight system are faced with enormous capital demands and their ability to invest is severely constrained. The rail industry is the most capital intensive industry sector in the U.S., investing an average of over 16% of its revenues during the 1990s (according to the Association of American Railroads), about five times that of the manufacturing sector average. Most of this investment is required to "rebuild" existing capacity which is literally "burned up" each year from use. Investment is also required for new equipment.

- Southern California mainline capacity investments will compete with intermodal terminal and rail yard investments, as well as mainline investments in other parts of the rail network.

- The cost of capital has also been an impediment to rail investment. Until recently, the return on invested capital by the railroads often did not cover the costs of borrowing. Overbuilding also left railroads with excess capacity in the 1990s and early 2000s, making these companies cautious about investment in fixed assets.

The expected growth in freight and passenger train volumes will substantially increase delays at at-grade freight and passenger rail crossings. Organizations throughout the region have determined that without additional grade separations, motor vehicle delays at grade crossings will more than triple between 2000 and 2025.

Major investments in the expansion of key components of the regional rail system, strategies that reduce rail emissions, and grade separation improvements of local streets affected by the system will allow the region to achieve its economic goals and produce vital quality of life benefits for local residents. The proposed investment would:

- Reduce freight rail delays by over 600% on key rail lines
- Reduce NOx and PM emissions
- Allow continued use and growth on important commuter rail lines
- Allow the ports to remain competitive by providing needed throughput for its customers
- Eliminate $1.5 billion of future debt from the freight railroads balance sheet
- Avoid additional congestion and vehicle travel time increases in key truck routes (e.g., I-710, SR-60, I-15)
- Eliminate increases in air emissions related to incremental truck traffic
- Maintain local/regional economic viability by facilitating reliable and efficient delivery of goods to market locally
- Help maintain existing and generate additional jobs in the region.

The region can fund these investments through innovative public-private partnerships that effectively utilize proven funding strategies and newly available sources of financing.

1.0 Importance of Maintaining Efficient Rail Connections to Southern California

Ensuring the continued viability of Southern California's international trade system is a priority for SCAG, the State of California, and the federal government. The San Pedro Bay ports handle over 40% of U.S. container cargo and growing trade with Asia could increase this share. In the year 2000, $200 billion worth of goods were moved through this trade system generating $16 billion in state and local taxes and more than 2 million trade-related jobs throughout the U.S. Growth in trade gives Southern California its first clear cut competitive advantage for creation of good paying blue collar jobs since the rise of the aerospace industry after World War II. Improvements in the regional goods movement system, of which this program is a centerpiece, is part of a 1,381,000 job economic strategy providing a pathway to the middle class for some of the 44.2% of local adults without college experience.

Intermodal rail cargo comprises 50 percent of the freight arriving at the San Pedro Bay Ports.[3] Movement of long-haul container cargoes by intermodal rail carriage confers many benefits including lower transportation costs for shippers and receivers, reduced congestion and highway

[3] The Port of Los Angeles, *San Pedro Bay Ports Rail Market Study*, April 2004.

costs for state and local transportation agencies, and lower emissions per ton-mile. Recent analyses indicate that by 2010 additional rail capacity will be needed to handle growth in container cargo.[4] Additionally, the rail carriers serving the region will also be required to make substantial investments in new intermodal terminals.

1.1. Capital Funding Needs

Regional Rail Expansion

While the San Pedro Bay ports enjoy numerous competitive advantages relative to other West Coast ports and all-water carriage to East Coast ports, the benefits of high market share cannot be taken for granted. Twice in the last decade (during the service "meltdowns" following the merger of the Union Pacific and Southern Pacific railroads and more recently following the floods and landslides in 2005) rapid declines in rail service caused diversion of discretionary traffic to other ports. Non-rail issues in 2004 also caused many importers to implement port diversion strategies whose impacts on San Pedro Bay port market share have only recently been corrected. So, the need for sufficient rail capacity is critical.

Recent projections included in SCAG's *Inland Empire Railroad Main Line Study* suggest that the number of freight trains on most BNSF and UP lines will more than double between 2000 and 2025 in response to a tripling of container volumes at the San Pedro Bay ports. Passenger train volumes are expected to experience similar volume growth – growth from 46 trains per peak day to 106 trains per peak day on the BNSF line between Fullerton and Los Angeles and growth from 12 to 36 trains per peak day on the UP San Gabriel line.

Most of the BNSF system south and west of Colton Crossing will need additional track by 2025, and several of these segments will require additional track as soon as 2010. By 2025 this line will require grade separated crossings at junctions where the two railroads have lines crossing. North of Colton Crossing over the Cajon Pass to Barstow, substantial additional mainline capacity will be needed by 2010 as well as new connections to the system.

In the UP system most of the Yuma line will require double tracking by 2025 and, depending on the scenarios analyzed, the San Gabriel line may require double tracking over major segments in the same timeframe. Also by 2025, UP will require several grade separated junctions.

While the freight railroads are making investments in new rail capacity, the Inland Empire Railroad Main Line Study concluded that rail capacity requirements are growing at twice the rate of new capacity additions. This high growth in freight and passenger train volumes will also substantially increase motor vehicle delays at at-grade freight and passenger rail crossings.

Rail Emission Reduction Scenarios

The focus on emission reductions relates to year 2014 federal air quality standards for PM2.5. This document identifies an alternative to reduce emissions related to freight rail movements in the Los Angeles Basin – upgrades to lower emission diesel locomotives.

Grade Separations

Organizations throughout the region have identified priority grade separations that were analyzed in the *Inland Empire Railroad Main Line Study* and it was determined that without additional grade separations, motor vehicle delay at grade crossings will more than triple between 2000 and 2025. Analysis of vehicle delay from high priority grade separations show that these could reduce growth in vehicle hours of daily delay (VHDD), cutting the 2025 delay in half. This will reduce motor vehicle idling delay and associated idling emissions, and by increasing train speeds, will reduce train emissions through more efficient operations.

[4] Southern California Association of Governments, *Inland Empire Railroad Main Line Study*, June 30, 2005.

1.2. A Proposed Public-Private Partnership

As a starting point for discussion and evaluation, SCAG proposes to combine private and public investments to construct rail capacity for freight and passenger train operations in Southern California, reduce the air quality impacts of rail, and help mitigate traffic through construction of high priority grade separations. SCAG proposes to involve a public-private partnership, and use innovative financing to fund rail capacity investments and grade separations. The costs will be shared among the Class I rail carriers, Metrolink, the State and federal government, and local communities. The investment packages a combination of rail capacity additions (primarily additional track and rail line crossing separations) needed to meet future freight and passenger demand and rail/road grade separations along the rail lines. The key aspects of the investment are:

- Construction of $2.43 billion (in 2007 dollars) of additional rail track along portions of the UP San Gabriel Valley and Yuma lines, and the BNSF Orange County line (see figure 1:Rail Capacity Improvements).
- Construction of 131 grade separations on local streets that cross the additional rail track (see appendix I for details).
- Implementation of port container fees, which will pay for a portion of the grade separations and Tier 4 locomotive upgrades.
- Implementation of rail container fees, similar to those used to fund the Alameda Corridor, which will pay a portion of the rail expansion and grade separation costs.
- Use of tax-exempt bond financing that will lower overall financing costs compared to what would be required to finance the project entirely with private railroad debt.
- Commuter rail service capacity expansion funded with additional tax-exempt bonds repaid through lease payments made by Metrolink.
- Partial use of savings from lower overall financing and project costs to pay part of the costs for rail/road grade separations.
- Partial payment for grade separations from State grants made available from proceeds of State Proposition 1B infrastructure investment bonds.
- Partial payment for grade separations from County Transportation Commissions.

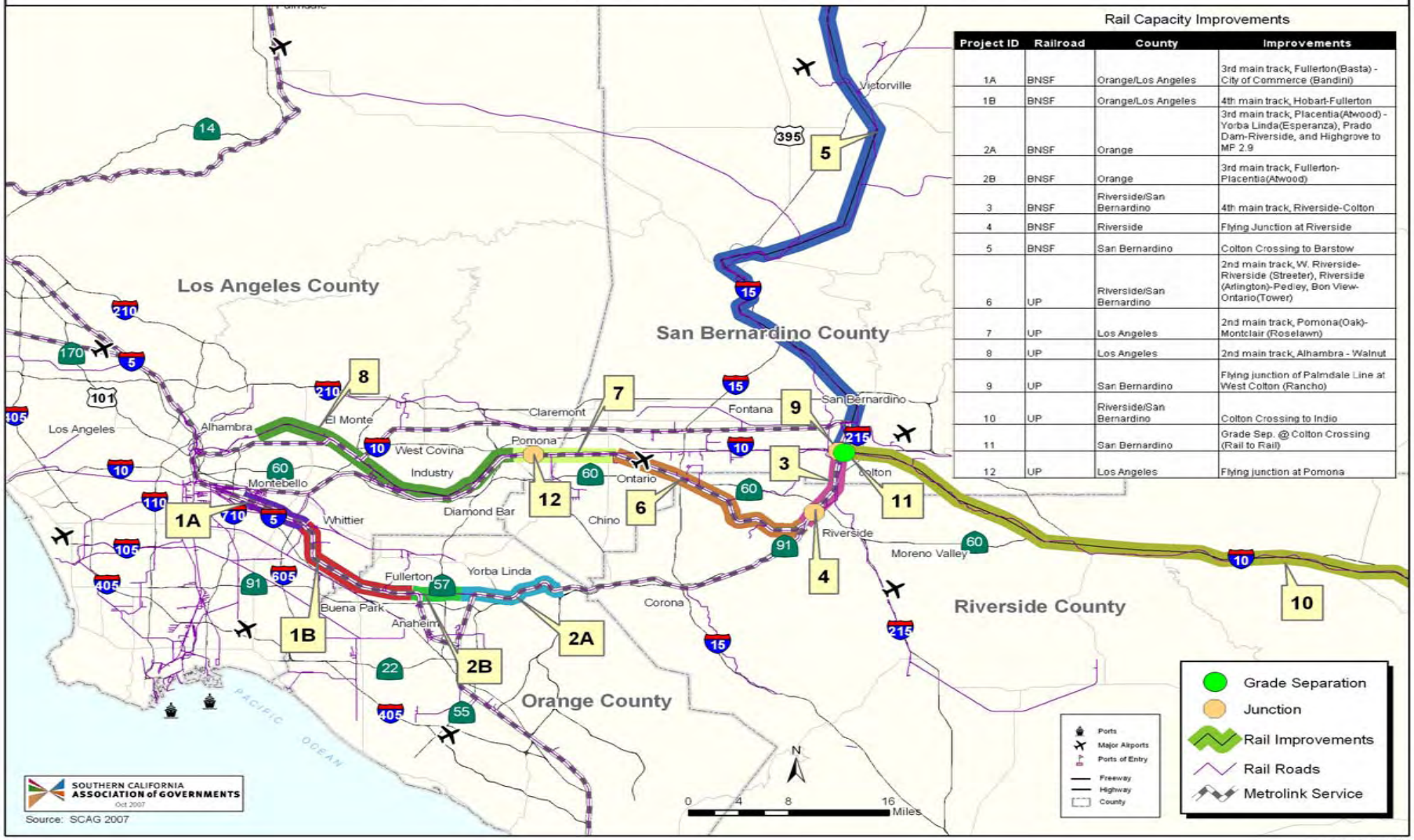
The proposed rail expansions totaling $2.43 billion (in 2007 dollars) include:

- Addition of a 3rd track on BNSF line from Bandini to Basta, Atwood to Esperanza/Prado Dam to West Riverside, and Fullerton Junction to Atwood
- Construction of Colton Crossing to Indio
- Addition of a 4th track on BNSF line from Hobart to Fullerton Junction and West Riverside to Colton Crossing
- A flying junction at West Riverside, Pomona, and West Colton
- Addition of a 3rd track on BNSF line from Colton Crossing to Rana, 4th track from San Bernardino to Verdemont, 3rd and 4th track from Verdemont to Cajon, 2nd 2.2% and 3.0% gradient track from Cajon to Summit, 3rd track from Summit to Barstow
- Addition of a 2nd track on UP line from West Riverside to Streeter, 2nd track from Arlington to Pedley, 2nd track from Bon View to Pomona, Pomona to Roselawn, and Alhambra to Walnut
- Grade separation at Colton Crossing

Figure 1 shows the location of the proposed rail capacity improvements along portions of the UP and BNSF lines. Maps showing the location of the various grade separation projects by county (Los Angeles, Orange, Riverside, and San Bernardino) are included in Appendix I.

Figure 1: Rail Capacity Improvements

Rail Capacity Improvements Program



Rail Capacity Improvements

Project ID	Railroad	County	Improvements
1A	BNSF	Orange/Los Angeles	3rd main track, Fullerton(Basta) - City of Commerce (Bandini)
1B	BNSF	Orange/Los Angeles	4th main track, Hobart-Fullerton
2A	BNSF	Orange	3rd main track, Placentia(Atwood) - Yorba Linda(Esperanza), Prado Dam-Riverside, and Highgrove to MP 2.9
2B	BNSF	Orange	3rd main track, Fullerton-Placentia(Atwood)
3	BNSF	Riverside/San Bernardino	4th main track, Riverside-Colton
4	BNSF	Riverside	Flying Junction at Riverside
5	BNSF	San Bernardino	Colton Crossing to Barstow
6	UP	Riverside/San Bernardino	2nd main track, W. Riverside-Riverside (Streeter), Riverside (Arlington)-Pedley, Bon View-Ontario(Tower)
7	UP	Los Angeles	2nd main track, Pomona(Oak)-Montclair (Roselawn)
8	UP	Los Angeles	2nd main track, Alhambra - Walnut
9	UP	San Bernardino	Flying junction of Palmdale Line at West Colton (Rancho)
10	UP	Riverside/San Bernardino	Colton Crossing to Indio
11		San Bernardino	Grade Sep. @ Colton Crossing (Rail to Rail)
12	UP	Los Angeles	Flying junction at Pomona

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2. Rail Expansion and Emission Reduction Strategy

The business case presents a strategy involving rail expansion, upgrades to lower emission diesel locomotives, and grade separations.

The capital improvement costs total $2.43 billion (in 2007 dollars) for additional rail track along portions of the UP San Gabriel Valley and Yuma lines, and the BNSF Orange County line, railroad and Metrolink locomotive upgrades to Tier 4 so that 100 percent of their fleet is upgraded by 2020, and $4.61 billion (in 2007 dollars) for 131 grade separations. A complete listing of grade separations is included in Appendix I.

The capital investments and cost estimates for the locomotive upgrades can be summarized as follows:

- The cost of each Tier 4 road diesel and switch diesel locomotive is assumed to be $2.4 million and $1.5 million respectively.
- A total of 830 Tier 4 freight locomotives would be needed for road diesel locomotives and an additional 100 Tier 4 locomotives would be needed for switch diesel locomotives for a total cost of $2.14 billion (in 2007 dollars).
- A total of 59 Tier 4 Metrolink locomotives would be needed for road diesel locomotives for a total cost of $0.14 billion (in 2007 dollars).
- The total cost of the locomotive upgrades is $2.3 billion (in 2007 dollars).

Estimated Emission Reductions

By 2020, 100 percent Tier 4 engine deployment would yield the following emission reductions:

Table 2
Scenario 2B
Estimated Baseline and Emission Reductions

	2014		2020	
	NOx (tons per day)	PM (tons per day)	NOx (tons per day)	PM (tons per day)
Baseline	22.75	0.85	25.82	0.88
Rail Capacity & Grade Seps	20.01	0.75	22.35	0.76
Reduction	2.74	0.11	3.47	0.12
Percent Reduction	**12%**	**12%**	**13%**	**14%**

	2020	
	NOx (tons per day)	PM (tons per day)
Baseline	25.82	0.88
100% Tier 4 Engines	4.64	0.11
Reduction	21.18	0.77
Percent Reduction	**82%**	**88%**

Financial Plan

The financial plan involves a unique public-private partnership that provides significant financial benefits for both the railroads and commuter rail:

- Results in substantially reduced debt financing costs for the railroads
- Increases rail capacity (i.e. velocity and throughput) without increasing railroad debt
- Accelerates rail capacity growth and increases railroad revenue potential
- Creates savings that can be used to fund grade separations
- Leverages future regional economic growth to provide public improvements

The financing plan includes port container fees, rail container fees, tax-exempt debt, and state and local funding for the capital costs of the project. The debt is repaid from port and rail container fees,

as well as payments from Metrolink. The financing plan takes advantage of several new provisions in SAFETEA-LU to produce the lowest possible financing costs and generate interest savings, which are used to fund additional public improvements.

Sources and Uses of Funds

The estimated funding sources for the capital costs are summarized in the following table. Adjusting for inflation, $5.995 billion of grade separations, $3.771 billion of locomotive upgrades, and $2.971 billion of rail expansion capital costs are funded.

The $5.995 billion of grade separation improvements are funded from a combination of State Proposition 1B funds, local (county) contribution, bonds secured with port container fees, and a portion of rail container fees equal to one-half of the estimated interest savings (i.e. the lower interest cost of tax exempt versus taxable bonds). The Tier 4 locomotive upgrades are funded from $1.886 billion of EPA grants and from $1.886 billion of port container fee revenues. The rail expansion costs are financed from $2.539 billion of revenue bonds (both "private activity" and public tax-exempt bonds), which are secured by rail container fees and payments from Metrolink, and from $478.0 million of State Proposition 1B funds.

Table 3
Capital Cost Sources and Uses of Funds
(Dollars in Millions)

	Total
Sources: [1]	
Port Container Fee Revenue Bonds – Grade Separations	$ 3,793.5
EPA Grants	1,885.5
Rail Container Fees – Tier 4 Locomotives	1,885.5
Rail Container Fee Revenue Bonds	1,539.2
Metrolink Revenue Bonds	1,000.5
State Grants – Rail Expansion	478.0
State Grants – Grade Separations	972.7
Local Funding	878.7
Rail Container Fees – Grade Separations	428.4
Total Sources	$12,862.0
Uses: [2]	
Grade Separations	$ 5,995.8
Tier 4 Locomotives	3,771.0
Rail Expansion	2,970.9
Bond Costs of Issuance	124.2
Total Uses	$12,862.0

Notes:
1 – Does not include port or rail container fees used to repay revenue bonds
2 – Costs in year-of-expenditure dollars, less interest earnings on unexpended bond proceeds

The interest cost for the port container fee bonds issued for grade separations is $3.588 billion. Interest on the rail container fee bonds, based on the assumed early repayment schedule, totals $705.2 million. Total interest on Metrolink bonds is $835.0 million.

Port and Rail Container Fees

The total projected number of TEUs, port container fee, and rail container fee revenue are shown in the following table.

Table 4
Projected Container Fees
(Dollars in Millions)

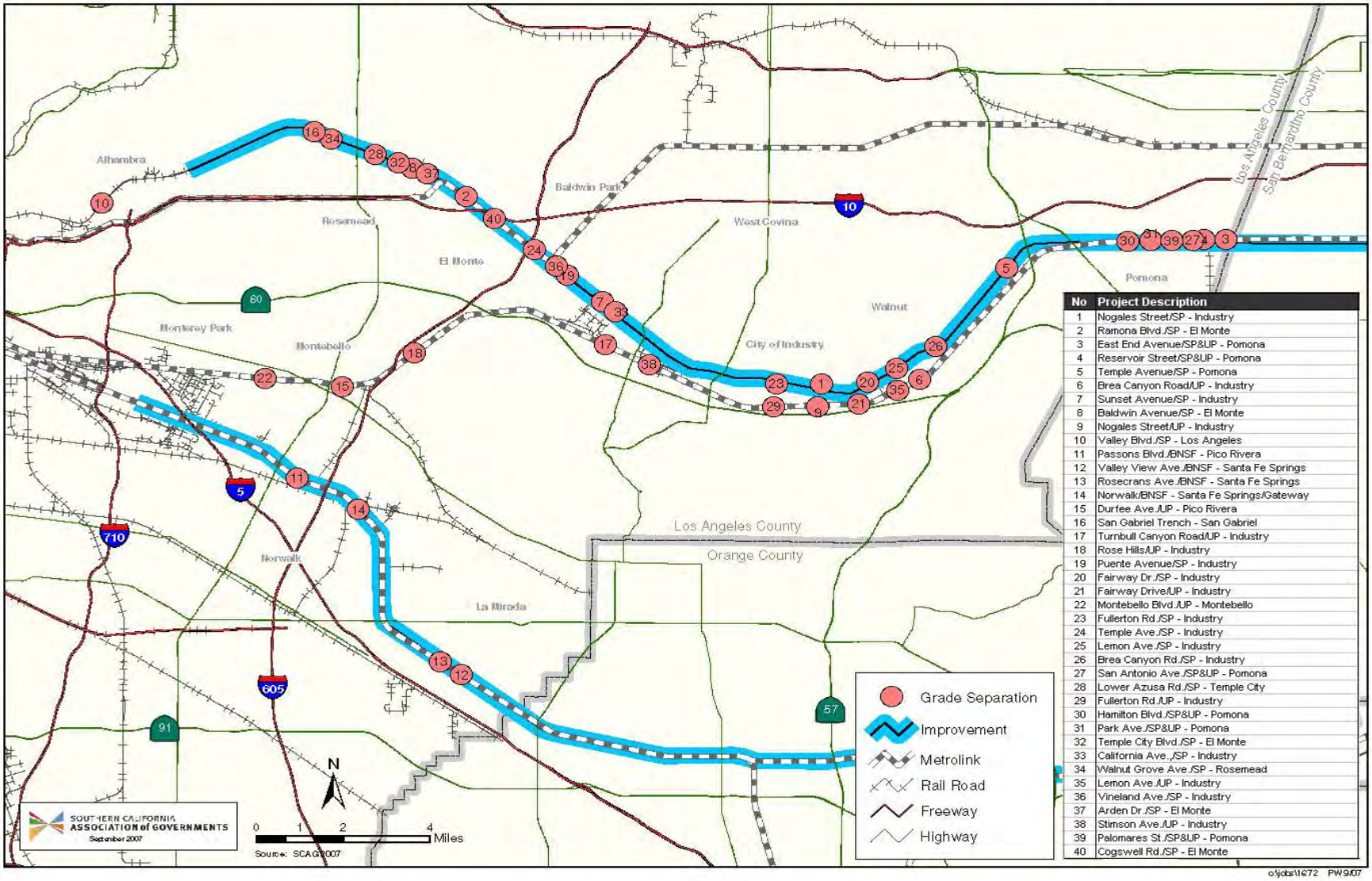
Year	Port TEU Forecast	Port Container Fee - Locomotive Upgrades	Port Container Fee – Grade Separations	Rail TEU Forecast	Rail Container Fee
2008	-	-	-	11,815,859	$9.20
2009	-	-	-	12,452,374	$9.20
2010	20,300,000	-	$1.94	13,134,304	$9.20
2011	21,660,000	-	$1.94	13,776,216	$9.20
2012	23,020,000	$6.42	$1.94	14,453,898	$9.20
2013	24,380,000	$6.38	$6.50	15,169,531	$9.20
2014	25,740,000	$6.37	$6.50	15,925,436	$9.20
2015	27,100,000	$6.37	$6.50	16,726,843	$9.20
2016	28,920,000	$6.28	$6.50	17,477,105	$9.20
2017	30,740,000	$6.23	$6.50	18,263,969	$9.20
2018	32,560,000	$6.19	$6.50	19,089,335	$9.20
2019	34,380,000	$6.17	$6.50	19,955,205	$9.20
2020	36,200,000	$6.17	$6.50	20,851,065	$4.95
2021	36,830,000	$6.39	$6.50	21,589,642	$4.95
2022	37,460,000	-	$6.50	22,355,287	$4.95
2023	38,090,000	-	$6.50	23,149,016	$4.95
2024	38,720,000	-	$6.50	23,971,885	$4.95
2025	39,350,000	-	$6.50	24,818,225	$4.00
2026	39,980,000	-	$6.50	24,818,225	$4.00
2027	40,610,000	-	$6.50	24,818,225	$3.50
2028	41,240,000	-	$6.50	24,818,225	$1.51
2029	41,870,000	-	$6.50	24,818,225	-
2030	42,500,000	-	$6.50	24,818,225	-
2031	42,500,000	-	$6.50	24,818,225	-
2032	42,500,000	-	$6.50	24,818,225	-
2033	42,500,000	-	$6.50	24,818,225	-
2034	42,500,000	-	$6.50	24,818,225	-
2035	42,500,000	-	$6.50	24,818,225	-
2036	42,500,000	-	$6.50	24,818,225	-
2037	42,500,000	-	$6.50	24,818,225	-
2038	42,500,000	-	$6.50	24,818,225	-
2039	42,500,000	-	$6.50	24,818,225	-
2040	42,500,000	-	$4.89	24,818,225	-
2041	42,500,000	-	$4.89	24,818,225	-
2042	42,500,000	-	$4.89	24,818,225	-
2043	42,500,000	-	-	24,818,225	-
2044	42,500,000	-	-	24,818,225	-

Allocation of Costs

The project costs are allocated among the various funding partners based on a number of factors, including the expected benefit. The assumptions used for the allocation of project costs are discussed in Appendix II.

APPENDIX I:
GRADE SEPARATION MAPS

Grade Separation Projects in Los Angeles County



No	Project Description
1	Nogales Street/SP - Industry
2	Ramona Blvd./SP - El Monte
3	East End Avenue/SP&UP - Pomona
4	Reservoir Street/SP&UP - Pomona
5	Temple Avenue/SP - Pomona
6	Brea Canyon Road/UP - Industry
7	Sunset Avenue/SP - Industry
8	Baldwin Avenue/SP - El Monte
9	Nogales Street/UP - Industry
10	Valley Blvd./SP - Los Angeles
11	Passons Blvd./BNSF - Pico Rivera
12	Valley View Ave./BNSF - Santa Fe Springs
13	Rosecrans Ave./BNSF - Santa Fe Springs
14	Norwalk/BNSF - Santa Fe Springs/Gateway
15	Durfee Ave./UP - Pico Rivera
16	San Gabriel Trench - San Gabriel
17	Turnbull Canyon Road/UP - Industry
18	Rose Hills/UP - Industry
19	Puente Avenue/SP - Industry
20	Fairway Dr./SP - Industry
21	Fairway Drive/UP - Industry
22	Montebello Blvd./UP - Montebello
23	Fullerton Rd./SP - Industry
24	Temple Ave./SP - Industry
25	Lemon Ave./SP - Industry
26	Brea Canyon Rd./SP - Industry
27	San Antonio Ave./SP&UP - Pomona
28	Lower Azusa Rd./SP - Temple City
29	Fullerton Rd./UP - Industry
30	Hamilton Blvd./SP&UP - Pomona
31	Park Ave./SP&UP - Pomona
32	Temple City Blvd./SP - El Monte
33	California Ave.,/SP - Industry
34	Walnut Grove Ave./SP - Rosemead
35	Lemon Ave./UP - Industry
36	Vineland Ave./SP - Industry
37	Arden Dr./SP - El Monte
38	Stimson Ave./UP - Industry
39	Palomares St./SP&UP - Pomona
40	Cogswell Rd./SP - El Monte

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Grade Separation Projects in Orange County

No	Project Description
1	Melrose Street Undercrossing (Completed)
2	Bradford Avenue Closure (Completed)
3	Imperial Highway Overcrossing
4	State College Blvd Undercrossing
5	Placentia Avenue Undercrossing
6	Kraemer Blvd. Undercrossing
7	Orangethorpe Avenue Overcrossing
8	Tustin Avenue/Rose Drive Overcrossing
9	Jefferson Street Overcrossing
10	Van Buren Avenue Overcrossing
11	Richfield Road Crossing
12	Lakeview Avenue Overcrossing
13	Kellogg Drive Undercrossing

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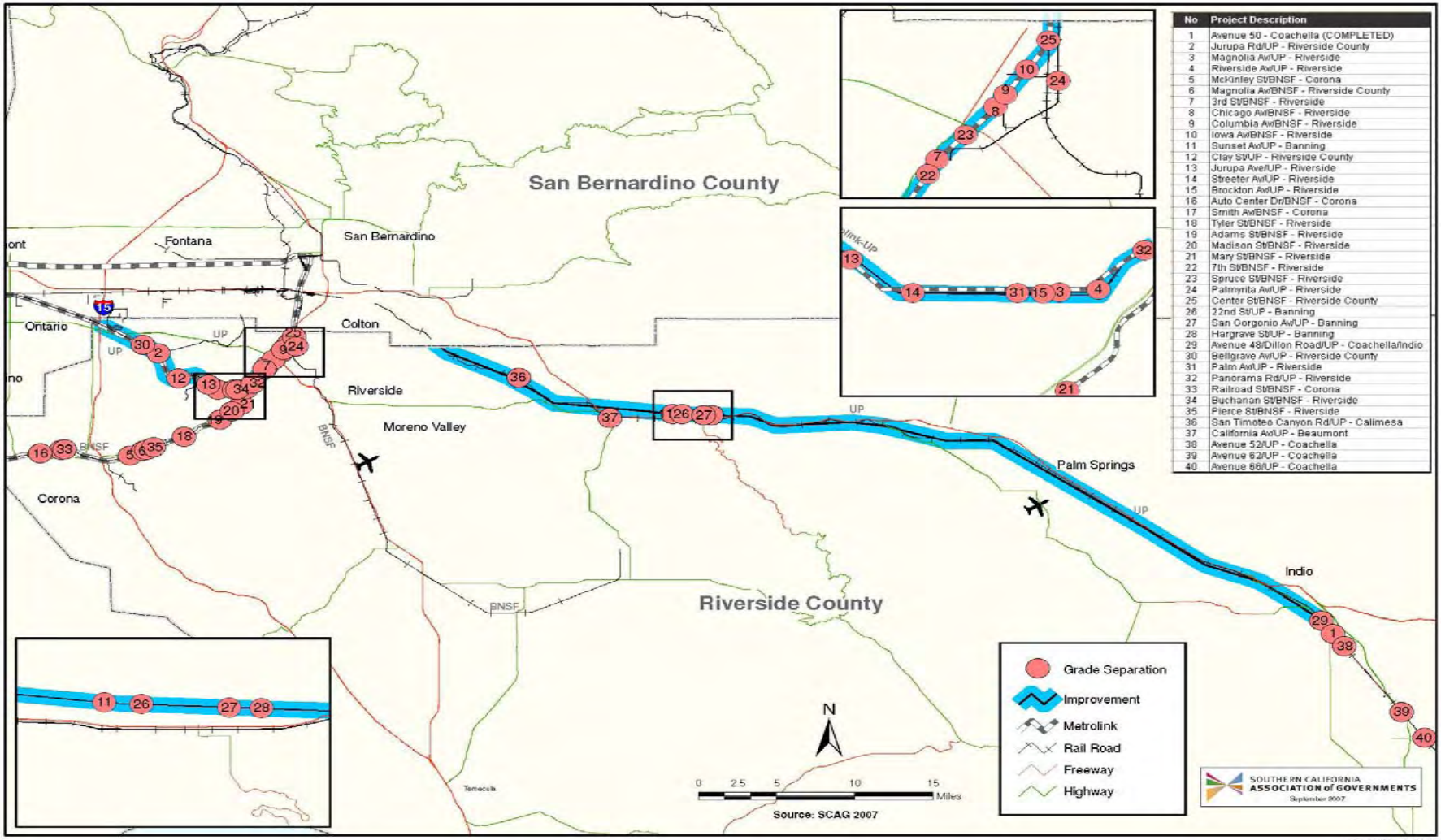
Grade Separation Projects in Riverside County



No	Project Description
1	Avenue 50 - Coachella (COMPLETED)
2	Jurupa Rd/UP - Riverside County
3	Magnolia Av/UP - Riverside
4	Riverside Av/UP - Riverside
5	McKinley St/BNSF - Corona
6	Magnolia Av/BNSF - Riverside County
7	3rd St/BNSF - Riverside
8	Chicago Av/BNSF - Riverside
9	Columbia Av/BNSF - Riverside
10	Iowa Av/BNSF - Riverside
11	Sunset Av/UP - Banning
12	Clay St/UP - Riverside County
13	Jurupa Ave/UP - Riverside
14	Streeter Av/UP - Riverside
15	Brockton Av/UP - Riverside
16	Auto Center Dr/BNSF - Corona
17	Smith Av/BNSF - Corona
18	Tyler St/BNSF - Riverside
19	Adams St/BNSF - Riverside
20	Madison St/BNSF - Riverside
21	Mary St/BNSF - Riverside
22	7th St/BNSF - Riverside
23	Spruce St/BNSF - Riverside
24	Palmyrita Av/UP - Riverside
25	Center St/BNSF - Riverside County
26	22nd St/UP - Banning
27	San Gorgonio Av/UP - Banning
28	Hargrave St/UP - Banning
29	Avenue 48/Dillon Road/UP - Coachella/Indio
30	Bellgrave Av/UP - Riverside County
31	Palm Av/UP - Riverside
32	Panorama Rd/UP - Riverside
33	Railroad St/BNSF - Corona
34	Buchanan St/BNSF - Riverside
35	Pierce St/BNSF - Riverside
36	San Timoteo Canyon Rd/UP - Calimesa
37	California Av/UP - Beaumont
38	Avenue 52/UP - Coachella
39	Avenue 62/UP - Coachella
40	Avenue 66/UP - Coachella

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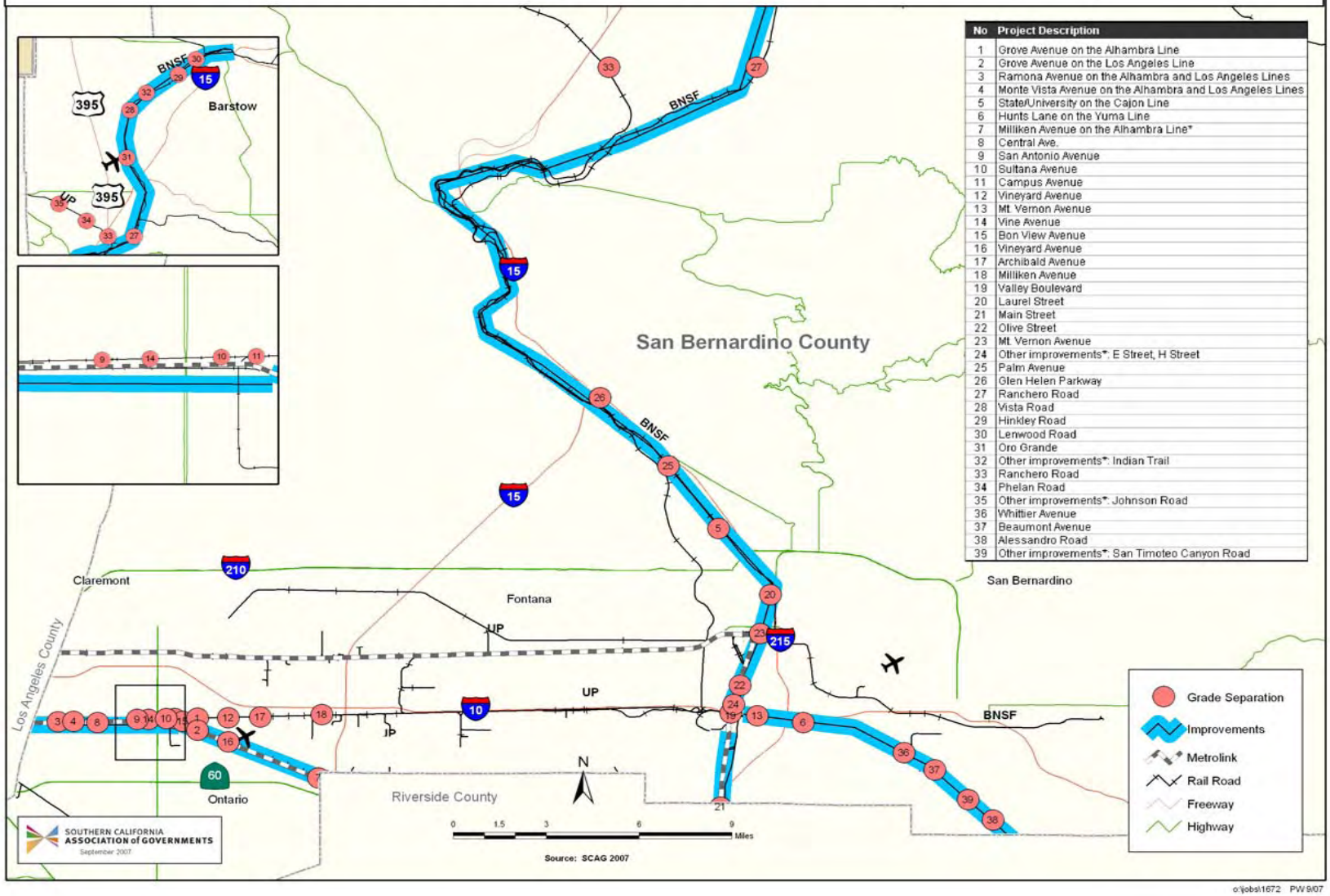
Grade Separation Projects in San Bernardino County



No	Project Description
1	Grove Avenue on the Alhambra Line
2	Grove Avenue on the Los Angeles Line
3	Ramona Avenue on the Alhambra and Los Angeles Lines
4	Monte Vista Avenue on the Alhambra and Los Angeles Lines
5	State/University on the Cajon Line
6	Hunts Lane on the Yuma Line
7	Milliken Avenue on the Alhambra Line*
8	Central Ave.
9	San Antonio Avenue
10	Sultana Avenue
11	Campus Avenue
12	Vineyard Avenue
13	Mt. Vernon Avenue
14	Vine Avenue
15	Bon View Avenue
16	Vineyard Avenue
17	Archibald Avenue
18	Milliken Avenue
19	Valley Boulevard
20	Laurel Street
21	Main Street
22	Olive Street
23	Mt. Vernon Avenue
24	Other improvements*: E Street, H Street
25	Palm Avenue
26	Glen Helen Parkway
27	Ranchero Road
28	Vista Road
29	Hinkley Road
30	Lenwood Road
31	Oro Grande
32	Other improvements*: Indian Trail
33	Ranchero Road
34	Phelan Road
35	Other improvements*: Johnson Road
36	Whittier Avenue
37	Beaumont Avenue
38	Alessandro Road
39	Other improvements*: San Timoteo Canyon Road

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APPENDIX II: RAIL EXPANSION COST ALLOCATION

Allocation of Costs among Funding Partners

The costs of the projects are allocated in relation to the expected benefits generated. The private railroads, UP and BNSF, would pay a rail container fee for the debt service costs of the new rail capacity based on the number of 20-foot equivalent unit (TEU) containers expected to travel through the corridor. Metrolink will pay for its share of the debt service costs with annual lease payments that are based on the projected relative usage of the newly-constructed rail capacity. The grade separations will be paid by the state, local jurisdictions, and the ports, and from a portion of the rail container fees equal to the interest savings generated from the project financing. The port container fee would fund both the locomotive upgrade costs and a portion of the grade separations.

The figure below shows the funding partners, the funding sources to be used, and the types of costs they are expected to fund.

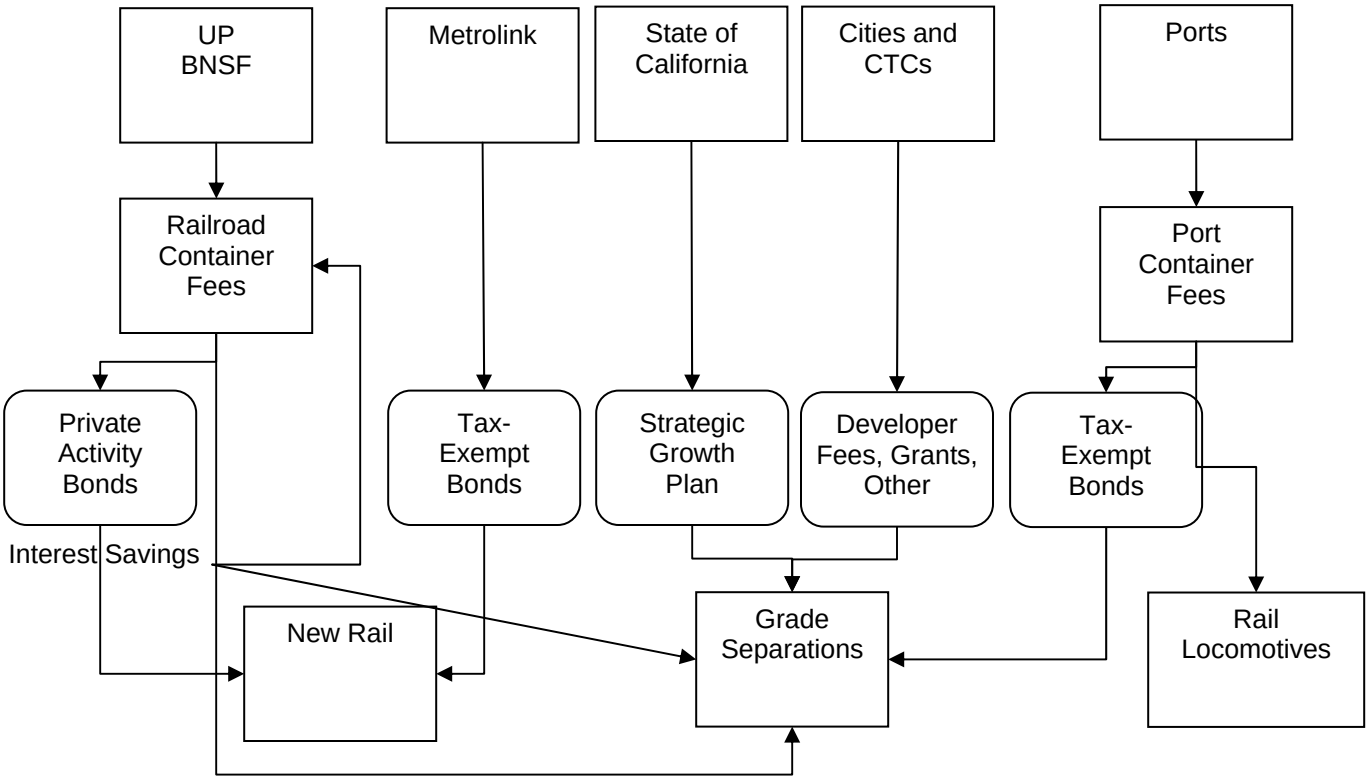

Figure 3: Funding Partners Payment of Project Costs

Railroads

The railroads would pay an ongoing container fee that will be used to repay bonds issued to finance the private freight portion of the new rail construction. The private freight portion has been determined using rail traffic estimates for each segment of the projects.

The table below identifies proposed major segments for the rail expansion project and the estimated capital cost.

Table II-1
Rail Improvements and Estimated Costs

Segment	Total Cost[1]
Phase I:	
3rd track from Bandini to Basta	$ 91.0
3rd track from Atwood to Esperanza/Prado Dam to West Riverside	130.0
3rd track from Fullerton Junction to Atwood	30.0
Colton Crossing to Indio	20.0
Subtotal, Phase I:	$ 271.0
Phase II:	
4th track from Hobart to Fullerton Junction	215.0
4th track from West Riverside to Colton Crossing	93.0
Flying junction at West Riverside	103.0
3rd track from Colton Crossing to Rana/4th track from San Bernardino to Verdemont/3rd and 4th track from Verdemont to Cajon/2nd 2.2% and 3.0% gradient track from Cajon to Summit/3rd track from Summit to Barstow	937.0
2nd track from West Riverside to Streeter/2nd track from Arlington to Pedley/2nd track from Bon View to Pomona	252.0
2nd track from Pomona to Roselawn	20.0
2nd track from Alhambra to Walnut	46.0
Flying junction at Pomona	50.0
Flying junction at West Colton	124.0
Grade separation at Colton Crossing	180.0
Subtotal, Phase II:	$2,020.0
Total	**$2,291.0**

1 – Cost in 2006 dollars.

The projects generate a significant economic benefit for the railroads – increased rail capacity at a lower financing cost. The projects will accelerate the development of additional rail capacity, which will give the railroads an opportunity to generate additional operating revenues. The interest rates for the debt issued for the project are lower than those available to the railroads, which results in interest savings. Moreover, the proposed debt will not be debt of the railroads and will not add a liability to the railroad's balance sheet.

Interest Savings and Grade Separation Costs

The railroads container fees are also assumed to pay for a portion of the grade separation costs, equal to one-half of the interest savings (due to the public issuance of the debt) on the debt issued to finance the rail expansion. The project's highly-rated tax-exempt debt has significantly lower interest rates in comparison to the taxable corporate debt that is available to

the railroads. The availability of tax-exempt private activity bonds for the railroad portion of the project will reduce the interest costs from 7.7% to 4.6%.[5]

The table below shows the calculation of the interest savings generated by the financing plan. The use of private activity debt reduces the total interest cost by $235.5 million for Phase I and $621.4 million for Phase II.

Table II-2
Financial Plan Interest Savings
(In Millions)

	Taxable Corporate Debt	Private Activity Debt	Interest Savings
Total Debt Service Costs			
Phase I	$1,006.6	$ 771.1	$235.5
Phase II	2,674.2	2,052.8	621.4
Total	$3,680.8	$2,823.9	$856.9

Metrolink

The projects provide much needed rail capacity for Metrolink so that additional commuter rail service can be offered to the region. Studies prepared by SCAG have found that both freight and passenger rail on the UP and BNSF lines will be severely impaired if existing capacity is not expanded. Average delay times for freight movement on the UP and BNSF lines are projected to increase by 600 percent from 2000 to 2010 without additional track capacity.[6] The freight rail delays could freeze all commuter rail on the Orange and Riverside County lines even with service at year 2000 levels.[7]

Furthermore, Metrolink estimates that ridership on the Orange County, Riverside, Inland-Orange, and 91 lines will increase from a combined 19,073 average weekday trips in fiscal year 2007 to 23,325 in 2010 and 41,449 in 2020.[8] The total number of weekday trains run on these lines is expected to more than double from 52 in 2005 to 118 in 2020.[9]

Metrolink, and the county transportation commissions that fund Metrolink, must take action to address the inevitable increase in freight traffic and make the needed capacity investments. This Business Plan assumes that Metrolink would fund the portion of the railway capacity expansion that is attributable to commuter rail service. This percentage has been identified based on freight and passenger train forecasts, and is projected to be financed with tax-exempt debt. Any future debt financing for the commuter rail portion of the project will likely require that Metrolink and its county transportation commission member agencies commit to make annual payments to retire the bonds.

Tax-Exempt Bonds

The portion of the rail expansion that is attributable to public use is assumed financed with $1.0 billion of tax-exempt bonds that is repaid from annual payments made by Metrolink, which receives funding from its member jurisdictions. The tax-exempt bonds will be of a high credit

[5] Total "interest cost" includes costs of issuing the bonds and are based on an assumed 7.5% taxable interest rate for freight rail corporate financing and current 1- to 30-year tax-exempt interest rates for insured California private-activity revenue bonds.
[6] Los Angeles Economic Development Council, *Los Angeles-Inland Empire Railroad Main Line Advanced Planning Study*, October 2002, p. 14.
[7] Ibid, p. 15.
[8] Southern California Regional Rail Authority, *SCRRA Strategic Assessment*, January 19, 2007, p. 89.
[9] Ibid.

quality as a result of a pledge by the Metrolink member jurisdictions to make payment on the bonds.

The annual debt service requirements for the Metrolink portion are $19.3 million for Phase I and $61.2 million for the combined Phase I and Phase II. The debt service would be paid from the Metrolink member agencies that benefit from the improvements – Metro, OCTA, RCTC, and SANBAG. The debt service for the project would be a substantial addition to the amount the member agencies already contribute for Metrolink operating and capital expenditures. For the fiscal year 2006-07, the Metrolink member agencies will fund $61.5 million of operating expenditures and $201.8 million of capital expenditures. The total Phase I and Phase II debt service for the project would represent 23.2% of the 2006-07 Metrolink member agency funding.

Table II-3
Metrolink 2006-07 Operating and Capital Expenditures
(Dollars in Millions)

	Member Agency Local Funds	Other Funds	Total Budget
Operating Expenditures	$ 61.5	$ 73.3	$134.8
Capital Expenditures	201.8	154.0	355.8
Total	$263.3	$227.3	$490.6
Phase I & Phase II Debt Service			$61.2

The project will likely be eligible for increased federal funding through the long-standing Section 5307 program, which will offset a portion of the cost payable from the member agencies. Nevertheless, the Metrolink member agencies will be liable for the project debt service costs and must make a funding commitment to address the projected freight traffic congestion and growth in commuter rail ridership.

State and Federal Agencies

The proposed rail capacity expansion projects will generate benefits at both the state and federal level by: (i) promoting job creation and business activity, (ii) improving air quality, and (iii) improving the efficiency of goods movement through California and the rest of the nation. The economic benefits of the project will generate tax and other governmental revenues for state and federal government, which in return, can help support the financing plan by providing financial assistance through direct grants and tax-exempt debt.

The financing plan relies on $1.45 billion of California Proposition 1B grants to fund rail expansion and grade separation projects, as well as federally tax-exempt debt financing that will reduce the overall interest cost of the project and produce savings that can be used for grade separation projects.

The locomotive upgrades are needed to meet the 2014 federal air quality emissions attainment deadline for PM 2.5. The financing plan includes $1.856 billion of subsidies from the U.S. Environmental Protection Agency (EPA) to help fund the cost of the upgrades.

State Grant – Proposition 1B

Proposition 1B, approved by voters in November 2006, includes $2 billion for goods movement projects in the state, to be deposited in the Trade Corridors Improvement Fund. The California Transportation Commission is required to consult the "Goods Movement Action Plan," released in January 2007, in determining projects eligible for funding. The Goods Movement Action Plan recommends a total of $691.0 million for grade separation projects in Alameda Corridor East, $422.0 million for improvements to BNSF and UP main line capacity, and $56.0 million for the

Colton Crossing grade separation project. This Business Plan assumes that the recommended Goods Movement Action Plan funding amounts, totaling $1.169 billion, will be available for rail expansion and grade separation costs.

Proposition 1B also includes $1 billion for emissions reduction programs aimed at California's goods movement corridors, to be allocated by the State Air Resources Board from the California Ports Infrastructure, Security, and Air Quality Improvement Account. Grade separation projects have been shown to improve air quality as a result of decreased idling and wait times and are eligible for federal air quality grant funding. Of the $1 billion available, it is assumed that the project receives 25%, or $250.0 million.

Proposition 1B also makes available an additional $250 million for high-priority grade separation projects from the Highway-Railroad Crossing Safety Account. These funds will be provided pursuant to a dollar-for-dollar match of non-state funds for each project.[10] It is assumed that the project will receive $31.7 million, which is equal to the amount of local funds budgeted for selected Phase II grade separation projects in San Bernardino County.

The table below shows the amount of projected funding from the State's various Strategic Growth Plan grants and the funding allocation to each county.

Table II-4
Strategic Growth Plan Grants
Assumed Funding Amounts
(Dollars in Millions)

Project	Total Funding	Projected Funding Amount
Trade Corridors Improvement Fund:	$2,000.0	
Alameda Corridor East Grade Separations		
Los Angeles County		313.0
Orange County		112.0
Riverside County		158.0
San Bernardino County		108.0
Burlington Northern Santa Fe/Union Pacific, Los Angeles Basin Rail Capacity Improvements		422.0
Burlington Northern Santa Fe/Union Pacific, Colton Crossing Grade Separation		56.0
California Ports Infrastructure, Security, and Air Quality Improvement Account:	1,000.0	
Orange County		125.0
Riverside County		125.0
Highway-Railroad Crossing Safety Account:	250.0	
San Bernardino County		31.7
Total	$3,250.0	$1,450.7

EPA Grants

The federal government (U.S. EPA) will need to provide subsidies to help mitigate locomotive emissions. The severity of the region's PM2.5 problem make it necessary to mitigate locomotive emissions. The financing plan assumes EPA will provide subsidies equal to 50% of the cost of locomotive upgrades for both the freight railroads and Metrolink. The EPA funding totals $1.856 billion.

[10] SB 1266, Chaptered 5/16/06

Ports

The projects will expand capacity on important rail arteries that link the Ports of Long Beach and Los Angeles to regional, statewide, and national rail systems, and will help facilitate projected increases in container traffic volumes. In the absence of such an expansion, freight traffic beyond the Alameda Corridor is expected to be congested and experience substantial delays. These delays will result in additional costs to shipping customers and may make the ports less competitive with other ports on the west coast and in Texas. Thus, investment in the regional rail system is arguably as important as investments at the ports themselves.

The Port of Los Angeles has undertaken a Capital Improvement Project that includes $1.2 billion for wharf upgrades, habitat restoration, surface road improvements, channel deepening, and other projects aimed at reinforcing the Port's market position.[11] The Port of Long Beach has a Capital Improvement Program of similar size, valued at $1.7 billion over the next five years.[12] These advancements will be diminished, however, if California's rail infrastructure is not enhanced. Because the rail capacity investments have the potential to increase throughput for goods shipped through the Ports of Long Beach and Los Angeles, and reduce the need for port investments for additional capacity, the rail expansion financing plan includes a total of $3.794 billion in contributions from port container fees to fund grade separations.

Local Agencies

The financing plan includes $784.1 million (in 2007 dollars) of "local funds," which represents state, federal, and local funds that various local agencies have already obtained for grade separations.[13] The following table lists the grade separations in this business case that currently have identified local funding, and the amount of funding.

[11] Fitch Ratings, "Harbor Department of the City of Los Angeles," September 2005.
[12] Port of Long Beach website, http://www.polb.com, accessed 2/1/07.
[13] The local agencies have identified $784.4 million of funding, in 2007 dollars, for grade separations. The business case assumes that an additional $94.3 million of local funding is obtained to fund inflation related to currently funded grade separations.

Table II-5
Local Funding Sources for Grade Separations
(Dollars in Millions)

Project	Amount
Los Angeles County	
Nogales Street/SP	$ 53.4
Ramona Blvd./SP	47.2
East End Avenue/SP&UP	33.4
Reservoir Street/SP&UP	35.5
Temple Avenue/SP	71.1
Brea Canyon Road/UP	61.7
Sunset Avenue/SP	62.3
Baldwin Avenue/SP	57.1
Orange County	
Melrose Street Undercrossing	20.5
Bradford Avenue Closure/Pedestrian Overpass	3.4
Imperial Highway Crossing	90.7
Riverside County	
Columbia Avenue/BNSF & UP	21.0
Sunset Avenue/UP	21.0
Jurupa Avenue/UP	21.7
Avenue 48/Dillon Road/UP	16.1
San Bernardino County	
Grove Avenue on the Alhambra Line	2.5
Grove Avenue on the Los Angeles Line	12.0
Ramona Avenue on the Alhambra and Los Angeles Lines	15.9
Monte Vista Avenue on the Alhambra and Los Angeles Lines	29.1
State/University on the Cajon Line	27.5
Hunts Lane on the Yuma Line	26.4
Milliken Avenue on the Alhambra Line	55.0
Total	**$784.1**

Rail Container Fee Tax-Exempt Bonds

The primary funding source for the rail expansion is tax-exempt bonds repaid from rail container fees. The financing plan includes $1.5 billion in 30-year bonds that are issued to fund rail expansion costs attributable to the railroads. The financing plan makes use of tax-exempt private activity bonds that have recently been authorized as part of SAFETEA-LU. The private activity bonds are secured by a rail container fee paid by the railroads, which significantly reduces the financing costs to the railroads. Tax-exempt bonds are also used to finance the public commuter rail component of the rail construction.

Security for the Bonds

The private activity bonds would be repaid through container fee revenue from the railroads. The railroads would pay container fees based on the amount of TEUs moving through the corridor. The projected container fee necessary to repay bonds, fund a portion of grade separation costs, and provide a sufficient amount of debt service coverage is $9.20 per TEU.

The estimated revenue from container fees is based on a forecast of TEUs that are transported on the UP and BNSF lines. It is estimated that 11.8 million TEUs, both loaded and empty, will travel on the UP and BNSF lines in 2008. TEU traffic is projected to increase at an average of 4.4% per year and total 24.8 million by 2025.

The total projected number of TEUs, container fee, and container fee revenue for the years 2008 through 2035 are shown in the table below. Based on the projected TEU traffic and container fee,

sufficient revenue is generated to repay all the bonds by 2029 – thirteen years prior to their scheduled maturity.

Table II-6
Projected Container Fees – Phase I and Phase II

Year	Total TEUs[1]	Container Fee	Total Revenue[2]
2008	11.8	$9.20	108.7
2009	12.5	$9.20	114.6
2010	13.1	$9.20	120.8
2011	13.8	$9.20	126.7
2012	14.5	$9.20	133.0
2013	15.2	$9.20	139.6
2014	15.9	$9.20	146.5
2015	16.7	$9.20	153.9
2016	17.5	$9.20	160.8
2017	18.3	$9.20	168.0
2018	19.1	$9.20	175.6
2019	20.0	$9.20	183.6
2020	20.9	$5.30	110.5
2021	21.6	$5.30	114.4
2022	22.4	$5.30	118.5
2023	23.1	$5.30	122.7
2024	24.0	$5.30	127.1
2025	24.8	$5.30	131.5
2026	24.8	$5.30	131.5
2027	24.8	$2.00	49.6
2028	24.8	$1.42	35.2
2029	24.8	-	-
2030	24.8	-	-
2031	24.8	-	-
2032	24.8	-	-
2033	24.8	-	-
2034	24.8	-	-
2035	24.8	-	-
Total			$2,672.9

Notes:
1 – Total UP and BNSF TEUs, both full and empty, that travel on the UP Alhambra, UP San Gabriel, and BNSF lines.
2 – In millions
Source: SCAG, Public Financial Management

Private Use and Private Activity Bonds

The portion of the project that benefits the railroads constitutes "private use," which in years past would not be eligible for tax-exempt financing. However, SAFETEA-LU makes a "private facility providing public benefit for highway users"[14] eligible for Title 23 funding, as well as an allocation of tax-exempt private activity bonds. SAFETEA-LU allows the Department of Transportation to allocate up to $15 billion in tax-exempt private activity bonds to eligible projects. The financing plan for the project relies on a private activity bond allocation of $1.539 billion from the Department of Transportation.

[14] SAFETEA-LU, Section 1601

Financial Impact of Indebtedness on Funding Partners

The bonds provide the railroads with increased rail capacity without increasing the amount of their corporate debt. The bonds will be issued by a separate, governmental joint powers authority and the payment from the railroads for debt service would not constitute an indebtedness of the railroads.

The proposed container fee will increase railroad operating costs and ultimately be passed to railroad customers. The amount of the proposed container fee must be at a level that is reasonably expected to be paid by the railroads and their customers. The reasonableness of the proposed container fee can be assessed by comparing the user fees to those charged for use of the Alameda Corridor.

The railroads currently pay a use and container charge to transport freight on the 20-mile long Alameda Corridor, which runs from the Ports of Los Angeles and Long Beach to the central rail yards near downtown Los Angeles. The Alameda Corridor user fee has been established primarily to repay tax-exempt and taxable bonds issued to construct the project. The user fee structure for Alameda Corridor has several components, including separate charges for full and empty waterborne and non-waterborne containers, and railcars. The predominance of revenue (over 90%) has been collected from the user fee on full, waterborne containers. The projected Alameda Corridor full, waterborne container user fee in calendar year 2008 is $17.09 per TEU. The total debt service on Alameda Corridor bonds is $85.7 million in 2008, steadily increasing to $198.6 million in 2033.

In comparison to the Alameda Corridor, the proposed container fees for the rail expansion and grade separations are lower. The proposed initial container fee for the project ($9.20 per TEU) is lower than the estimated Alameda Corridor user fee and, moreover, is not expected to increase.

Table II-7
Comparison of User Fees, Containers, and Revenues
Regional Rail Expansion Project and Alameda Corridor

	Regional Rail Expansion Project	Alameda Corridor
2008 Estimates:		
User Fee	$9.20	$17.09
TEUs	11.8 million	4.6 million
Revenue	$108.7 million	$83.8 million
2020 Estimates:		
User Fee	$5.30	$21.68
TEUs	20.8 million	7.4 million
Revenue	$110.5 million	$174.6 million

Legal and institutional considerations

The bonds for the project will be issued by a "joint powers authority" ("JPA") created among the local governmental stakeholders. The JPA participants can include representatives of the county transportation commissions, local cities, ports, and State of California. The JPA can issue the tax-exempt bonds under existing California law.

Cash Flow Pro Forma

Table II-8 below shows the pro forma cash flows of the financing plan. The cash flows show the revenues for capital and debt service (bonds, port container fees, rail container fees, Metrolink payments, grants, and local contributions), and the payment of future capital expenditures and

debt service on the bonds. The projected cash flows show that the revenue from container fees and Metrolink contributions are sufficient to repay debt service, fund the locomotive upgrades and grade separations, and generate surplus revenue that is used to repay the rail container fee bonds prior to maturity.

Table II-8
Cash Flow Pro Forma[1]
(Dollars in Millions)

Year	Port Container Fee	User Fees	Metrolink	Metrolink/ Rail Bonds	Port Cntr. Fee Bonds	State Grants	EPA Grants	Local	Rail Exp.	Grade Sep.	Tier 4 Locom. Upgrade	Early Bond Repayment	Port Fee Debt Service	User Fee Debt Service	Balance
2007	-	-	-	-	-	-	-	200.2	-	200.2	-	-	-	-	-
2008	-	108.7	-	101.5	-	-	-	240.2	101.5	240.2	-	-	-	-	108.7
2009	-	114.6	19.3	107.6	249.1	-	-	170.8	107.6	419.8	-	-	-	45.0	197.6
2010	39.5	120.8	19.3	567.0	259.2	343.7	-	150.7	767.0	553.6	-	-	39.5	45.0	292.7
2011	39.5	126.7	19.3	470.1	395.8	505.0	-	-	692.1	678.8	-	-	39.5	45.0	393.7
2012	187.3	133.0	61.2	677.6	226.9	289.0	147.8	-	733.6	459.9	295.6	-	39.5	155.3	432.6
2013	324.9	139.6	61.2	234.8	877.3	313.0	155.7	-	234.8	1,308.1	311.3	-	169.2	155.3	360.3
2014	334.6	146.5	61.2	248.9	606.5	-	163.9	-	248.9	606.5	327.8	-	170.7	155.3	412.6
2015	348.7	153.9	61.2	263.8	1,371.0	-	172.6	-	263.8	1,681.7	345.2	90.0	176.1	155.3	71.7
2016	369.7	160.8	61.2	-	47.1	-	181.7	-	-	47.1	363.5	86.0	188.0	153.2	54.4
2017	391.2	168.0	61.2	-	-	-	191.4	-	-	-	382.7	82.3	199.9	149.2	52.2
2018	413.2	175.6	61.2	-	-	-	201.5	-	-	-	403.0	78.7	211.7	145.3	65.0
2019	435.7	183.6	61.2	-	-	-	212.2	-	-	-	424.4	75.2	223.5	141.6	92.9
2020	458.8	110.5	61.2	-	-	-	223.4	-	-	-	446.9	71.9	235.4	138.1	54.5
2021	474.8	114.4	61.2	-	-	-	235.3	-	-	-	470.6	68.8	239.5	134.8	26.6
2022	243.6	118.5	61.2	-	-	-	-	-	-	-	-	65.8	243.6	131.6	8.9
2023	247.7	122.7	61.2	-	-	-	-	-	-	-	-	63.0	247.7	128.5	1.3
2024	251.8	127.1	61.2	-	-	-	-	-	-	-	-	60.3	251.8	125.6	3.7
2025	255.9	131.5	61.2	-	-	-	-	-	-	-	-	57.7	255.9	122.8	15.9
2026	260.0	131.5	61.2	-	-	-	-	-	-	-	-	55.2	260.0	105.1	48.4
2027	264.1	49.6	61.2	-	-	-	-	-	-	-	-	52.9	264.1	102.2	4.1
2028	268.2	35.2	61.2	-	-	-	-	-	-	-	-	-	268.2	100.5	0.1
2029	272.3	-	61.2	-	-	-	-	-	-	-	-	-	272.3	61.2	0.1
2030	276.4	-	61.2	-	-	-	-	-	-	-	-	-	276.4	61.2	0.1
2031	276.4	-	61.2	-	-	-	-	-	-	-	-	-	276.4	61.2	0.1
2032	276.4	-	61.2	-	-	-	-	-	-	-	-	-	276.4	61.2	0.1
2033	276.4	-	61.2	-	-	-	-	-	-	-	-	-	276.4	61.2	0.1
2034	276.4	-	61.2	-	-	-	-	-	-	-	-	-	276.4	61.2	0.1
2035	276.4	-	61.2	-	-	-	-	-	-	-	-	-	276.4	61.2	0.1
2036	276.4	-	61.2	-	-	-	-	-	-	-	-	-	276.4	61.2	0.1
2037	276.4	-	61.2	-	-	-	-	-	-	-	-	-	276.4	61.2	0.1
2038	275.3	-	61.2	-	-	-	-	-	-	-	-	-	275.3	61.2	0.1
2039	275.3	-	41.9	-	-	-	-	-	-	-	-	-	275.3	41.9	0.1
2040	207.8	-	41.9	-	-	-	-	-	-	-	-	-	207.8	41.9	0.1
2041	207.9	-	41.9	-	-	-	-	-	-	-	-	-	207.9	41.9	0.1
2042	207.8	-	-	-	-	-	-	-	-	-	-	-	207.8		
Total	$9,266.9	$2,672.9	$1,835.5	$2,671.3	$4,033.0	$1,450.7	$1,885.5	$761.9	$3,149.3	$6,196.0	$3,771.0	$907.7	$7,381.4	$3,172.2	

Debt Service Coverage Ratio

The rail container fee is set higher than the annual debt service in order to provide sufficient debt service coverage in the event actual revenue is less than projected. Any revenue in excess of the annual debt service requirement is used to retire the railroad private activity bonds prior to their maturity and fund a limited amount of grade separations.

The table below shows projected debt service coverage on the bonds, based on the container fee and container forecast described herein.

Table 11
Debt Service Coverage
(Dollars in Millions)

Year	Rail Container Fees	Private Activity Debt Service	Debt Service Coverage[1]
2008	$108.7	-	-
2009	114.6	25.7	4.46
2010	120.8	25.7	4.70
2011	126.7	25.7	4.93
2012	133.0	94.1	1.41
2013	139.6	94.1	1.48
2014	146.5	94.1	1.56
2015	153.9	94.1	1.63
2016	160.8	92.1	1.75
2017	168.0	88.0	1.91
2018	175.6	84.1	2.09
2019	183.6	80.5	2.28
2020	110.5	76.9	1.44
2021	114.4	73.6	1.56
2022	118.5	70.4	1.68
2023	122.7	67.3	1.82
2024	127.1	64.4	1.97
2025	131.5	61.6	2.13
2026	131.5	43.9	3.00
2027	49.6	41.0	1.21
2028	35.2	39.3	0.90
2029	-	-	-
2030	-	-	-
2031	-	-	-
2032	-	-	-
2033	-	-	-
2034	-	-	-
2035	-	-	-

1 – Does not include fund balances used to pay debt service in 2027 and 2028.